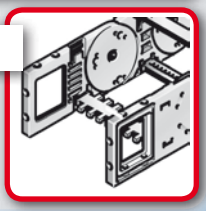
System overview

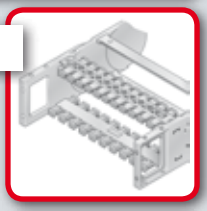
1 Chain bracket

Chain bracket flexible

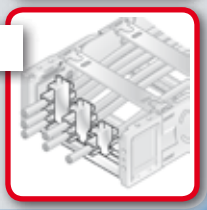


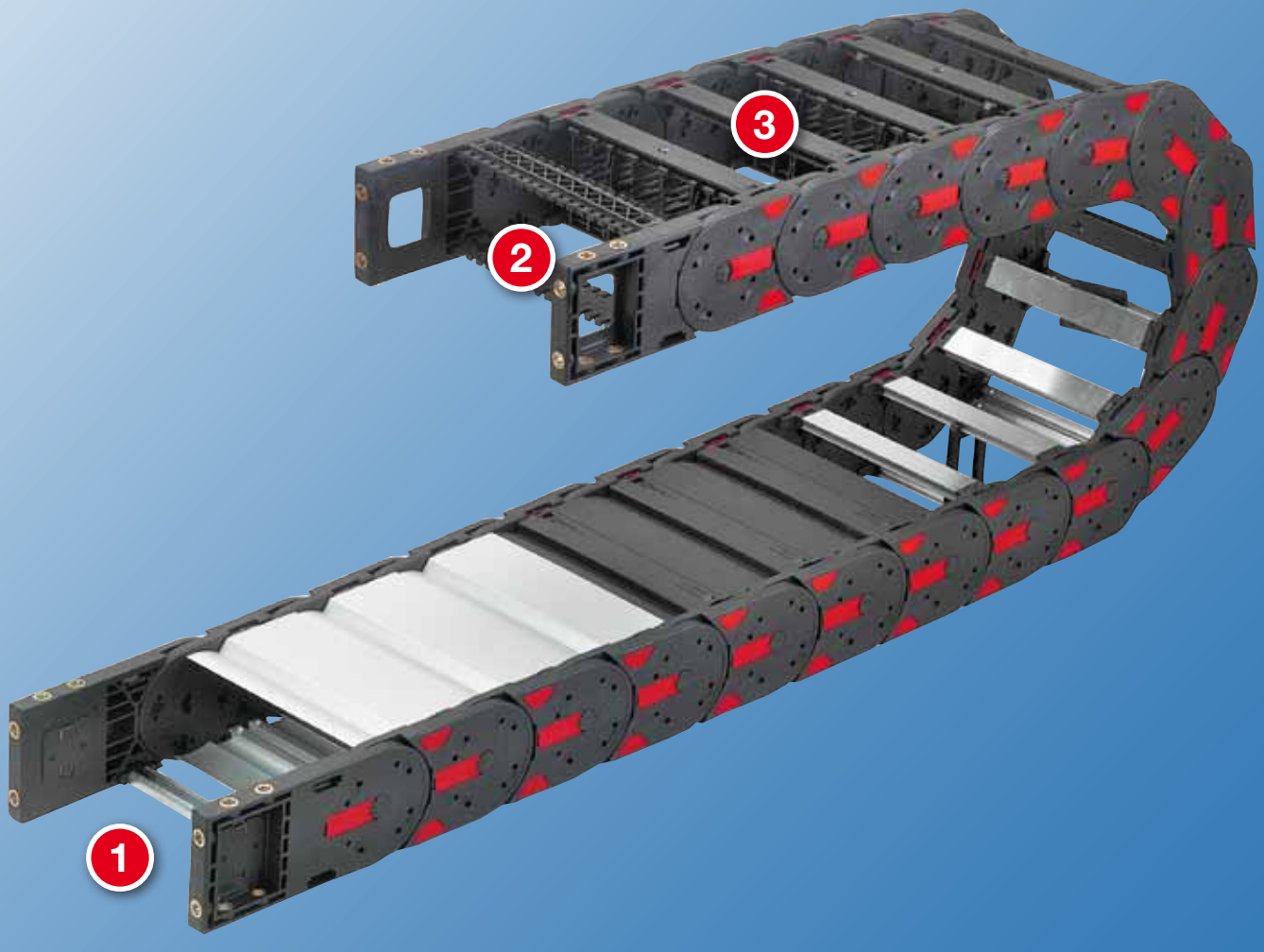
2 Strain relief

Frame bridge RS-ZL



STF Steel Fix

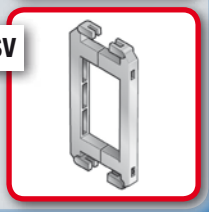




3 Shelving system

Separator TR

Frame bridge connector RSV

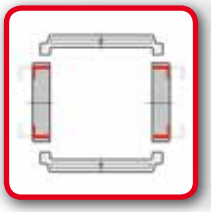


Guide channels

Aluminium VAW

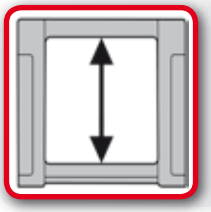
Stainless steel VAW-E

Technical data



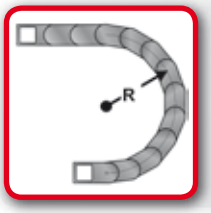
Loading side

inside and outside flexure curve



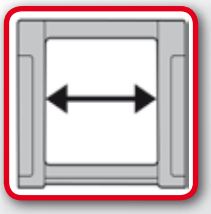
Available interior heights

82.0 mm



Available radii

150.0 – 650.0 mm



Available interior widths

118.0 – 518.0 mm

With aluminium frame bridge
118.0 – 600.0 mm

Ordering key

Type	Variation	Inside width mm	Outside width mm	Radius mm	Ridge version	Material	Chain length mm
		118	163				
		143	188				
		168	213				
		193	238				
		218	263				
		243	288		0[1]		
		268	313	150[1]	1[1]		
		293	338	200	2[1]		
		318	363	250	3[1]		
		343	388	300	4		
		368	413	350	5	0	
		418	463	400	6[1]	5[1]	
0822	30	468[1]	513[1]	500	7[1]	7[1]	
0823	44[2]	518[1]	563[1]	650	9[1]	9	

[1] for variant 30 only
[2] reduced inner height, reduced max. cable diameter, see chain link drawing (values in brackets)

Ordering key ____ __ ___ ___ _ _ ______

Note on configuration

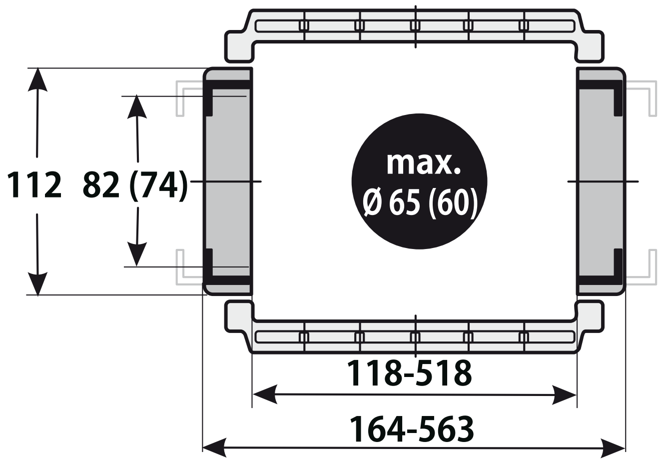
Frame bridges and cover from aluminium:
Aluminium frame bridges and covers can be supplied in 1 mm width sizes for inner widths from 118.0 mm – 600.0 mm.
If frame bridge strain relief plates (RS-ZL) are to be deployed, take standard widths into account.

Crossbar connector and frame bridge strain relief plate:
Once inner widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium. If frame bridge strain relief plates (RS-ZL) are to be placed in the chain brackets, take the standard widths that can be supplied into account.

For detailed information, please consult the corresponding product documentation.

Chain link

Loading side: inside and outside flexure curve



Dimensions in mm

0	Standard (PA/black)
5	Polypropylene (PP/blue)
7	EMC (PA/light grey)
9	Special version

0	PA full-ridged with bias
1	PA full-ridged without bias
2	PA half-ridged with bias
3	PA half-ridged without bias
4	Aluminium full-ridged with bias
5	Aluminium full-ridged without bias
6	Aluminium half-ridged with bias
7	Aluminium half-ridged without bias
9	Special version

30	Frame bridge on outside of radius Frame bridge on inside of radius Opens on inside and outside of radius
44	Cover on outside of radius Cover on inside of radius Opens on inside and outside of radius

Order sample: 0822 30 118 150 0 0 1534
Frame bridge in outside bend, frame bridge in inside bend, can be opened from inside and outside bend
Inside width 118 mm; radius 150 mm
Plastic bridge, full-ridged with bias, material black-coloured polyamide
Chain length 1534 mm (13 links)

Technical specifications

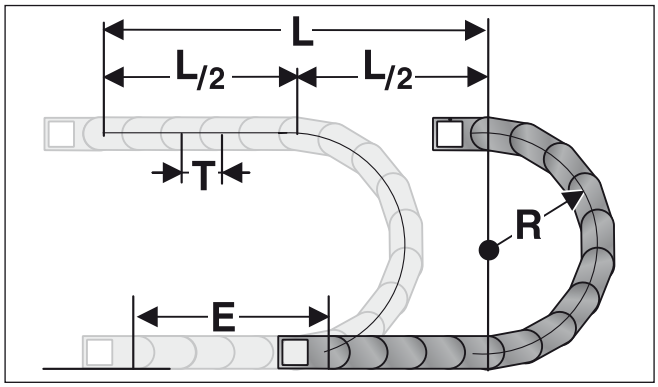
Travel distance gliding L_g max.:	150.0 m
Travel distance self-supporting L_f max.:	see diagram
Travel distance vertical, hanging L_{vh} max.:	80.0 m
Travel distance vertical, upright L_{vs} max.:	6.0 m
Rotated 90°, unsupported L_{90f} max.:	3.0 m
Speed, gliding V_g max.:	5.0 m/s
Speed, self-supporting V_f max.:	20.0 m/s
Acceleration, gliding a_g max.:	25.0 m/s²
Acceleration, self-supporting a_f max.:	40.0 m/s²

Material properties

Standard material:	Polyamide (PA) black
Service temperature:	-30.0 – 120.0 °C
Gliding friction factor:	0.3
Static friction factor:	0.45
Fire classification:	UL 94 HB

Other material properties on request.

Determining the chain length

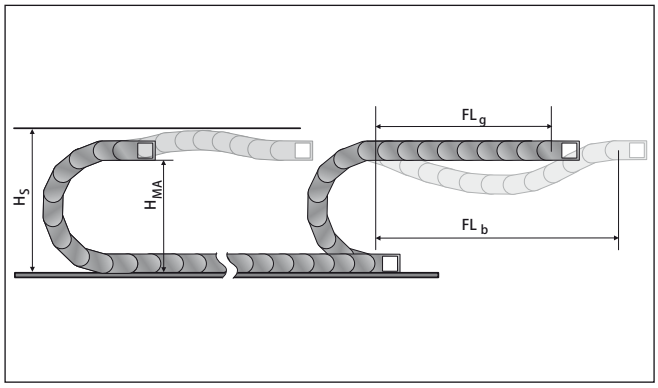


The fixed point of the cable drag chain should be connected in the middle of the travel distance.
This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = L/2 + π * R + E
≈ 1 m chain = 9 qty. x 118.0 mm links.

E = distance between entry point and middle of travel distance
L = travel distance
R = radius
P = Pitch

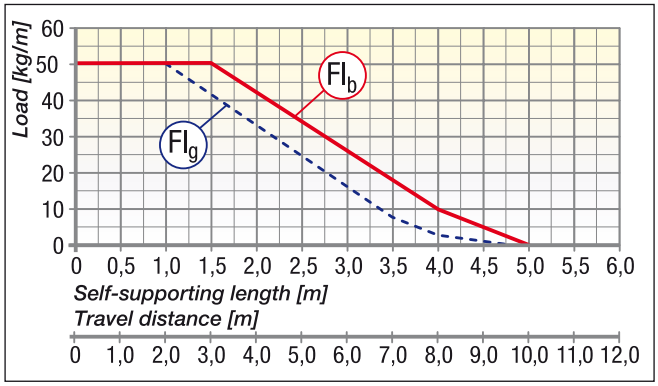
Self-supporting length



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.
The installation variant FL_g offers the lowest load and wear for the cable drag chain.
The maximum travel parameters (speed and acceleration) can be applied for this variant.

H_S = Installation height plus safety
H_{MA} = Height of moving end connection
FL_g = Self-supporting length, upper run straight
FL_b = Self-supporting length, upper run bent

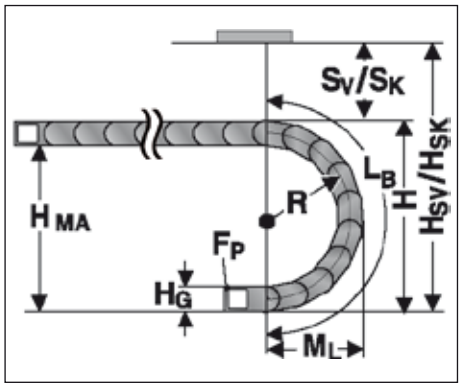
Load diagram for self-supporting applications



FL_g Self-supporting Length, upper run straight
In the FL_g range, the chain upper run still has a bias, is straight or has a maximum sag of

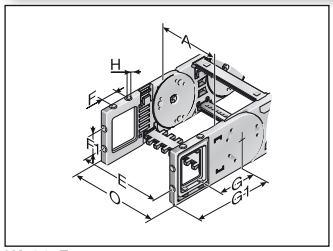
FL_b Self-supporting Length, upper run bent
In the FL_b range, the chain upper run has a sag of more than , but this is still less than the maximum sag.
Where the sag is greater than that permitted in the FL_b range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.
Closed cable drag chains (with covers) have a higher unit weight than open chains (with frame bridges). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 3.1 kg/m, to account for the higher weight of closed-cover chains.

Installation dimensions



Radius R	150	200	250	300	350	400	500	650
Outside height of chain link (H_G)	112	112	112	112	112	112	112	112
Height of bend (H)	422	522	622	722	822	922	1122	1422
Height of moving end connection (H_{MA})	310	410	510	610	710	810	1010	1310
Safety margin with bias (S_V)	50	50	50	50	50	50	50	50
Installation height with bias (H_{SV})	472	572	672	772	872	972	1172	1472
Safety margin without bias (S_K)	30	30	30	30	30	30	30	30
Installation height without bias (H_{SK})	452	552	652	752	852	952	1152	1452
Arc projection (M_L)	329	379	429	479	529	579	679	829
Bend length (L_B)	781	938	1095	1252	1409	1566	1880	2351

Chain bracket flexible

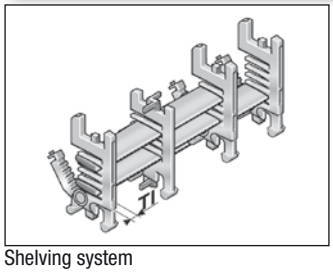


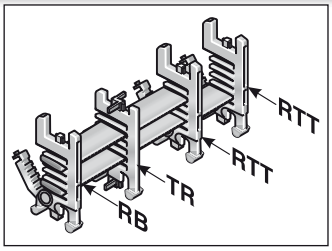
KA 82-F...

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M10 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Type	Order no.	Mate-rial	Version	Inside width A mm	E mm	F mm	F1 mm	G mm	G1 mm	H	HØ mm	Outside width KA O mm
KA 82-FB male	0820000056	Plastic	with bush	118.0 – 518.0	A+23.0	35.0	66.0	117.0	182.0		11.0	A+45.0
KA 82-FB female	0820000057	Plastic	with bush	118.0 – 518.0							11.0	A+45.0
KA 82-FG male	0820000058	Plastic	with thread	118.0 – 518.0						M10		A+45.0
KA 82-FG female	0820000059	Plastic	with thread	118.0 – 518.0						M10		A+45.0

Shelving system



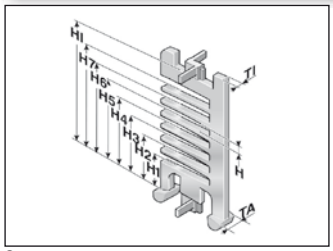


Shelving system

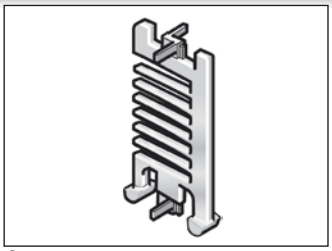
In connection with at least two shelf supports (RTT) the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and therefore destroying each other, while also avoiding excessive friction. The shelving system may be pre-assembled on request.

Type	Order no.	Designation	Width mm	Pitch mm	TI mm
RB 056-7	100000005600	Shelf	56.0	5.0	
RB 066-7	100000006600	Shelf	66.0	5.0	
RB 081-7	100000008100	Shelf	81.0	5.0	
RB 106-7	100000010600	Shelf	106.0	5.0	
RB 116-7	100000011600	Shelf	116.0	5.0	
RB 166-7	100000016600	Shelf	166.0	5.0	
RB 216-7	100000021600	Shelf	216.0	5.0	
RTT 82	100090822000	Shelf support, divisible		5.0	8.0

Separator



Separator

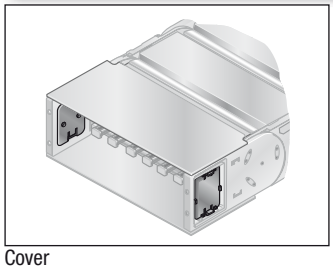


Separator

We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. An offset configuration of the separators is advisable.

Type	Order no.	Designation	Pitch mm	TI mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H7 mm	HI mm
TR 82	082000009200	Separator	5.0	3.5	5.4	12.2	20.5	28.8	37.0	45.4	53.7	62.0	79.5

Cover chain bracket

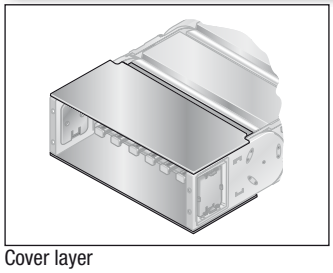


Cover

Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order no.
Cover D8 KA 82.1-FB/FG	0823888002

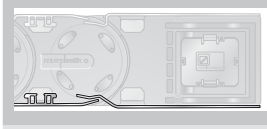
Cover chain bracket



Cover layer

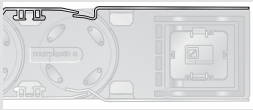
Constructed from aluminium, the canopies for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

Canopy for: chain bracket, fixed point outside bend: Type and part number configurator



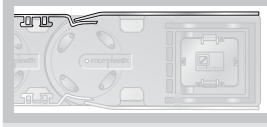
Type:	KA 82.1 FB/FG AB	Inside width	2-2
Order no.:	0821	Inside width	060

Cover for: Bracket fixed point inside bend: Type and part number configurator



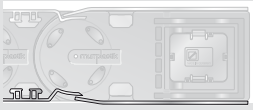
Type:	KA 82.1 FB/FG IB	Inside width	2-2
Order no.:	0821	Inside width	058

Cover for: Bracket moving end outside bend: Type and part number configurator



Type:	KA 82.1 FB/FG AB	Inside width	1-2
Order no.:	0821	Inside width	059

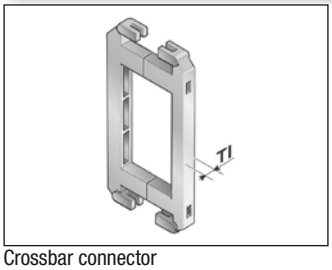
Cover for: Bracket moving end inside bend: Type and part number configurator



Type:	KA 82.1 FB/FG IB	Inside width	1-2
Order no.:	0821	Inside width	057

Sample order:
0821096058 KA 82.1 FB/FG IB 118 2-2
Chain bracket cover at fixing point in inner bend, for inner width of 118 mm.

Crossbar connector

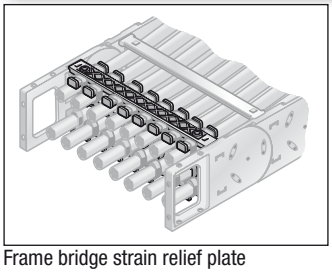


Crossbar connector

For frame bridges wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the frame bridge under large amounts of additional weight of the chain assembly.

Type	Order no.	Designation	TI mm
RSV 82	082000009600	Crossbar connector	8.0
RSV 82 Alu	082000009800	Crossbar connector for aluminium frame bridges	8.0

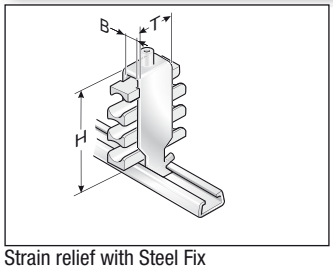
Frame bridge strain relief plate


Frame bridge strain relief plate

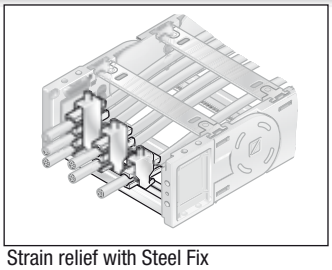
Fixed integrated frame bridge strain relief plates in the chain brackets. Accommodated to all widths of the frame bridges, up to 243 mm in size. May be assembled on the inside and outside flexure curves at both chain endings.

Type	Order no.	Designation	For internal width mm
RS-ZL 118-7	072011800010	Frame bridge strain relief plate	118.0
RS-ZL 143-7	072014300010	Frame bridge strain relief plate	143.0
RS-ZL 168-7	072016800010	Frame bridge strain relief plate	168.0
RS-ZL 193-7	072019300010	Frame bridge strain relief plate	193.0
RS-ZL 218-7	072021800010	Frame bridge strain relief plate	218.0
RS-ZL 243-7	072024300010	Frame bridge strain relief plate	243.0

Strain relief



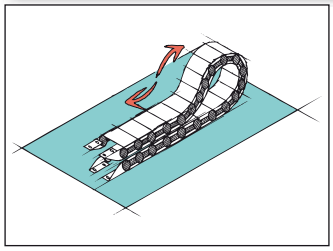
Strain relief with Steel Fix

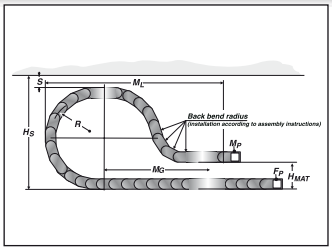

Strain relief with Steel Fix

C-rails (cathodic dipped) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements a cable preserving cable guidance is ensured. Adjusted to all inside widths up to 200 mm. May be assembled on the inside and outside flexure curves at both chain endings. The entire height entered is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order no.	Designation	Ø mm	Seats qty.
Single clamp (for one cable)				
STF 12-1 Steel Fix	81661801	Hooped clamp	6.0 – 12.0	1
STF 14-1 Steel Fix	81661802	Hooped clamp	12.0 – 14.0	1
STF 16-1 Steel Fix	81661803	Hooped clamp	14.0 – 16.0	1
STF 18-1 Steel Fix	81661804	Hooped clamp	16.0 – 18.0	1
STF 20-1 Steel Fix	81661805	Hooped clamp	18.0 – 20.0	1
STF 22-1 Steel Fix	81661806	Hooped clamp	20.0 – 22.0	1
STF 26-1 Steel Fix	81661807	Hooped clamp	22.0 – 26.0	1
STF 30-1 Steel Fix	81661808	Hooped clamp	22.0 – 26.0	1
STF 34-1 Steel Fix	81661809	Hooped clamp	26.0 – 30.0	1
STF 38-1 Steel Fix	81661810	Hooped clamp	34.0 – 38.0	1
STF 42-1 Steel Fix	81661811	Hooped clamp	38.0 – 42.0	1
Double clamp (for two cables)				
STF 12-2 Steel Fix	81661821	Hooped clamp	6.0 – 12.0	2
STF 14-2 Steel Fix	81661822	Hooped clamp	12.0 – 14.0	2
STF 16-2 Steel Fix	81661823	Hooped clamp	14.0 – 16.0	2
STF 18-2 Steel Fix	81661824	Hooped clamp	16.0 – 18.0	2
STF 20-2 Steel Fix	81661825	Hooped clamp	18.0 – 20.0	2
STF 22-2 Steel Fix	81661826	Hooped clamp	20.0 – 22.0	2
STF 26-2 Steel Fix	81661827	Hooped clamp	22.0 – 26.0	2
STF 30-2 Steel Fix	81661828	Hooped clamp	26.0 – 30.0	2
STF 34-2 Steel Fix	81661829	Hooped clamp	26.0 – 30.0	2
Triple clamp (for three cables)				
STF 12-3 Steel Fix	81661841	Hooped clamp	6.0 – 12.0	3
STF 14-3 Steel Fix	81661842	Hooped clamp	12.0 – 14.0	3
STF 16-3 Steel Fix	81661843	Hooped clamp	14.0 – 16.0	3
STF 18-3 Steel Fix	81661844	Hooped clamp	16.0 – 18.0	3
STF 20-3 Steel Fix	81661845	Hooped clamp	18.0 – 20.0	3
STF 22-3 Steel Fix	81661846	Hooped clamp	20.0 – 22.0	3

Lowered fixing point





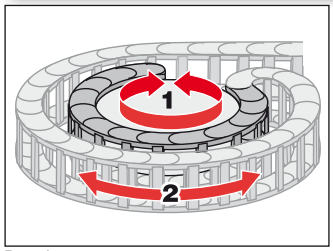
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end connection (H_{MA}) mm	Safety margin (S) mm	Installation height incl. safety (H_S) mm	Projection (M_L) mm	Additional links qty.	of which additional back chain links qty.
200.0	240.0	60.0	582.0	900.0	8.0	2.0
250.0	260.0	60.0	682.0	1050.0	10.0	2.0
300.0	290.0	60.0	782.0	1130.0	11.0	2.0
400.0	420.0	60.0	962.0	1340.0	13.0	2.0
500.0	400.0	60.0	1182.0	1620.0	16.0	4.0

Back radii

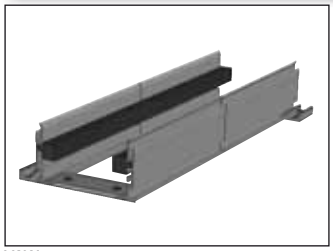


Rotating movement

Side links with radius forward (R) and radius backward (Rü) allow for movement in two directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side!

Type	Order no.	Radius mm	Back radius mm
SR 82.2 (RÜ300/R300) left	082200030060	300.0	300.0
SR 82.2 (RÜ300/R300) right	082200030062	300.0	300.0

Guide channels (VAW)

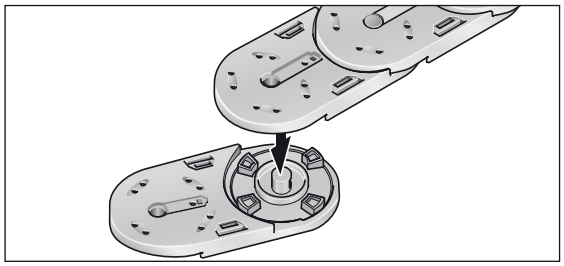


VAW

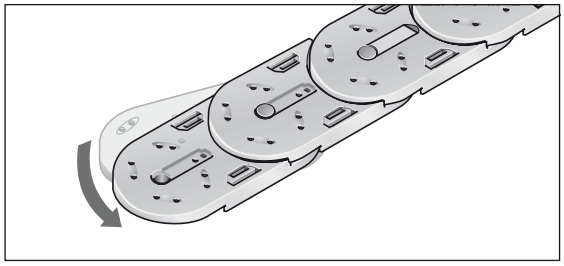
VAW-E

For this cable drag chain, a range of variable guide channel systems are available, constructed from aluminium or stainless steel sections.
The variable guide channel ensures that the cable drag chain is supported and guided securely.
For help on choosing, please consult the chapter „Variable Guide Channel System“.

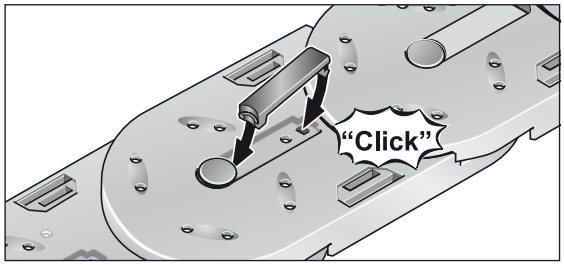
Assembly



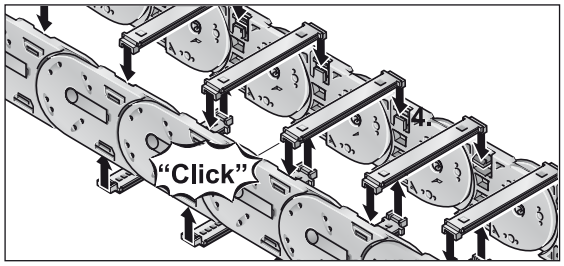
Step 1



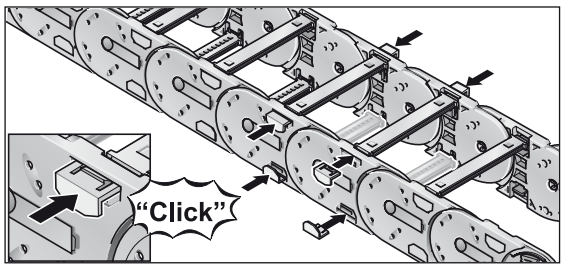
Step 2



Step 3

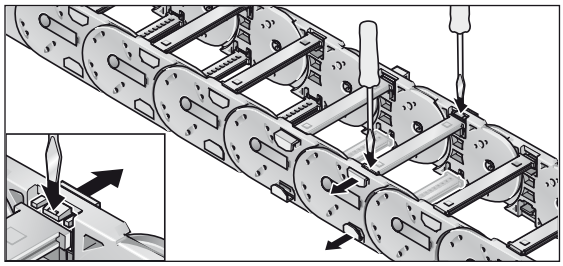


Step 4

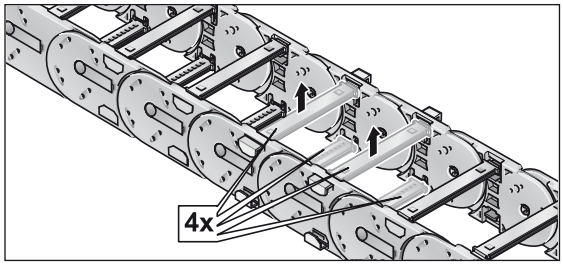


Step 5

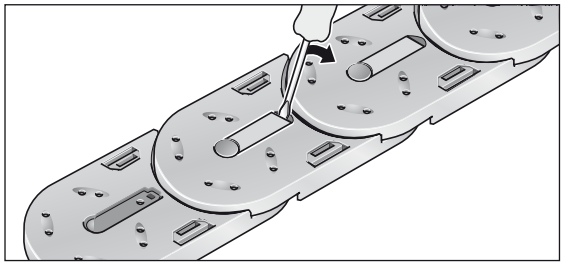
Disassembly



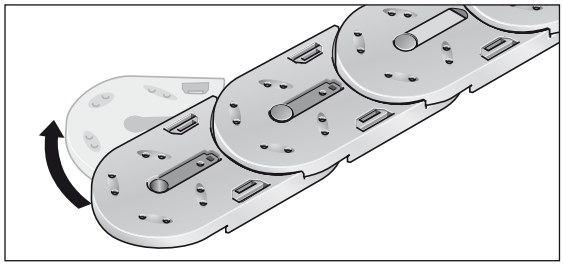
Step 1



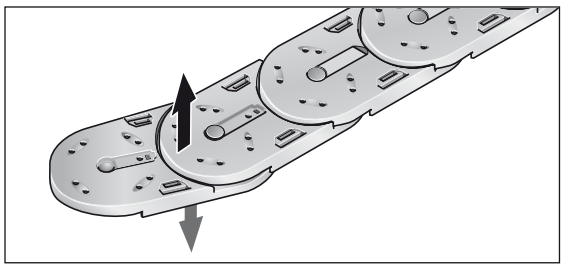
Step 2



Step 3

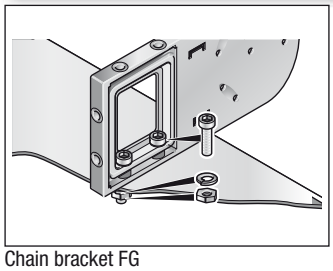


Step 4

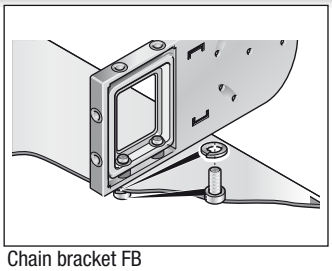


Step 5

Assembly instruction flexible chain bracket



Chain bracket FG



Chain bracket FB

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

Version KA-FB:
Integrated through-hole fastened down using screw and nut.
Version KA-FG:
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.